AO 120 (Rev. 3/04)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Northern District of Georgia on the following X Patents or ☐ Trademarks:

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
1:09-CV-2666-WSD	09/28/2009	Northern District of Georgia
PLAINTIFF Munters Corporation		DEFENDANT Novelaire Technologies, L.L.C.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	US 6,557,365 B2	May 6, 2003	Munters Corporation
2	US 6,711,907 B2	March 30, 2004	Munters Corporation
3	US 7,047,751 B2	May 23, 2006	Munters Corporation
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5			

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
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In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director **Copy 3—Upon termination of action, mail this copy to Director**
Copy 2—Upon filing document adding patent(s), mail this copy to Director **Copy 4—Case file copy**

US006557365B2

(12) **United States Patent**
Dinnage et al.

(10) **Patent No.: US 6,557,365 B2**
(45) **Date of Patent: May 6, 2003**

(54) **DESICCANT REFRIGERANT DEHUMIDIFIER**

(75) Inventors: **Paul A. Dinnage**, Stratham, NH (US); **Stephen C. Brickley**, Newbury, MA (US)

(73) Assignee: **Munters Corporation**, Amesbury, MA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/795,818**

(22) Filed: **Feb. 28, 2001**

(65) **Prior Publication Data**

US 2002/0116934 A1 Aug. 29, 2002

(51) **Int. Cl.**[7] **F25D 23/00**; F25D 17/06
(52) **U.S. Cl.** **62/271**; 62/94
(58) **Field of Search** 62/271, 94, 93

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,186,844 A	*	1/1940	Smith	62/94
2,562,811 A		7/1951	Muffly	62/103
2,946,201 A		7/1960	Munters	62/94
2,968,165 A	*	1/1961	Norback	62/271
3,247,679 A		4/1966	Meckler	62/271
3,401,530 A		9/1968	Meckler	62/2
4,113,004 A		9/1978	Rush et al.	165/3
4,180,985 A		1/1980	Northrup, Jr.	62/94
4,474,021 A	*	10/1984	Harband	62/94
5,170,633 A		12/1992	Kaplan	62/94
5,353,606 A		10/1994	Yoho et al.	62/271
5,373,704 A		12/1994	McFadden	62/94
5,502,975 A		4/1996	Brickley et al.	62/94
5,517,828 A		5/1996	Calton et al.	62/271
5,526,651 A		6/1996	Worek et al.	62/271
5,551,245 A		9/1996	Calton et al.	62/90
5,564,281 A		10/1996	Calton et al.	62/90
5,579,647 A		12/1996	Calton et al.	62/94
5,632,954 A		5/1997	Coellner et al.	422/4
5,649,428 A		7/1997	Calton et al.	62/94
5,660,048 A		8/1997	Belding et al.	62/94
5,701,762 A		12/1997	Akamatsu et al.	62/636
5,727,394 A		3/1998	Belding et al.	62/94
5,758,508 A		6/1998	Belding et al.	62/94
5,761,915 A		6/1998	Rao	62/94
5,761,923 A		6/1998	Maeda	62/271
5,791,153 A		8/1998	Belding et al.	62/93
5,816,065 A		10/1998	Maeda	62/271
5,825,641 A		10/1998	Bierwirth et al.	165/48.1
5,890,372 A		4/1999	Belding et al.	62/271
5,931,016 A	*	8/1999	Yoho	62/271
5,943,874 A		8/1999	Maeda	62/271
6,003,327 A		12/1999	Belding et al.	62/271
6,018,953 A		2/2000	Belding et al.	62/94
6,029,462 A		2/2000	Denniston	62/94
6,029,467 A	*	2/2000	Moratalla	62/271
6,050,100 A		4/2000	Belding et al.	62/271
6,094,835 A		8/2000	Cromer	34/80
6,141,979 A		11/2000	Dunlap	62/176.6

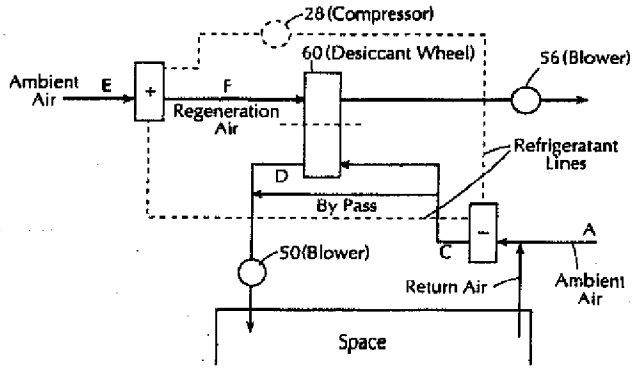
* cited by examiner

Primary Examiner—William C. Doerrler
(74) *Attorney, Agent, or Firm*—Fitzpatrick, Cella, Harper & Scinto

(57) **ABSTRACT**

A method and apparatus for conditioning air for an enclosure is disclosed in which a supply air stream, preferably from the atmosphere is cooled by the cooling coil of a refrigerant cooling system to reduce the temperature and humidity thereof to first predetermined level. The thus cooled and dehumidified air is then passed through a segment of a rotating desiccant wheel under conditions which reduce moisture content and increase temperature to a second predetermined temperature range. The supply air is then delivered from the desiccant wheel to the enclosure. The desiccant wheel is regenerated by heating a separate regeneration air stream, also preferably from the atmosphere, using the condensing coil of the refrigerant system in order to increase the regeneration air stream temperature to a third predetermined temperature range. The thus heated regeneration air stream is then passed through another segment of the rotating desiccant wheel to regenerate the wheel.

25 Claims, 10 Drawing Sheets



US006711907B2

(12) **United States Patent**
Dinnage et al.

(10) **Patent No.: US 6,711,907 B2**
(45) **Date of Patent: Mar. 30, 2004**

(54) **DESICCANT REFRIGERANT DEHUMIDIFIER SYSTEMS**

(75) Inventors: **Paul A. Dinnage**, Stratham, NH (US); **Kevin H. Young**, Newmarket, NH (US)

(73) Assignee: **Munters Corporation**, Amesbury, MA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **10/316,952**

(22) Filed: **Dec. 12, 2002**

(65) **Prior Publication Data**

US 2003/0121271 A1 Jul. 3, 2003

Related U.S. Application Data

(63) Continuation-in-part of application No. 09/795,818, filed on Feb. 28, 2001.

(51) **Int. Cl.**[7] **F25D 17/06**; F25D 23/00
(52) **U.S. Cl.** **62/94**; 62/271
(58) **Field of Search** ..... 62/94, 271, DIG. 17

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,180,985 A 1/1980 Northrup, Jr. 62/94
4,474,021 A * 10/1984 Harband 62/94
4,936,107 A * 6/1990 Kitagaki et al. 62/184
5,517,828 A * 5/1996 Calton et al. 62/271
5,761,923 A * 6/1998 Maeda 62/271
5,816,065 A * 10/1998 Maeda 62/271
5,931,016 A * 8/1999 Yoho, Sr. 62/271
6,141,979 A * 11/2000 Dunlap 62/176.6
6,557,365 B2 * 5/2003 Dinnage et al. 62/271

FOREIGN PATENT DOCUMENTS

EP 0191007 8/1986

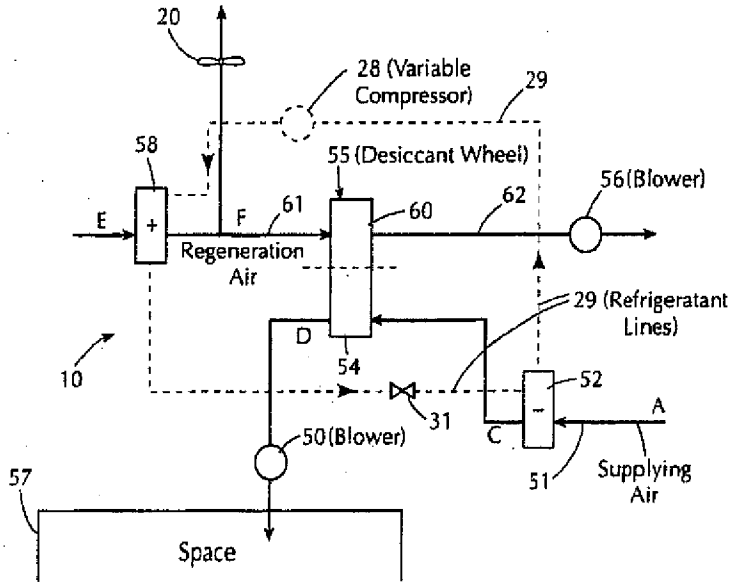
* cited by examiner

Primary Examiner—William C. Doerrler
(74) *Attorney, Agent, or Firm*—Fitzpatrick, Cella, Harper & Scinto

(57) **ABSTRACT**

A method for conditioning air for an enclosure in which a supply air stream is cooled with a refrigerant system containing a variable compressor by passing the air over a cooling coil to reduce the temperature thereof; the thus cooled supply air stream is then passed through a segment of a rotating desiccant wheel under conditions which increase its temperature and reduce its moisture content, and then delivered to the enclosure. The desiccant wheel is regenerated by heating a regeneration air stream with the condensing coil of the refrigerant system, and then passing the heated regeneration air stream through another segment of the rotating desiccant wheel. At least one condition of the supply air stream, the regeneration air stream, and/or the refrigerant system is sensed or monitored and the output of the compressor is controlled in response to the sensed condition.

4 Claims, 14 Drawing Sheets



US007047751B2

(12) **United States Patent**
Dinnage et al.

(10) **Patent No.: US 7,047,751 B2**
(45) **Date of Patent: *May 23, 2006**

(54) **DESICCANT REFRIGERANT DEHUMIDIFIER SYSTEMS**

(75) Inventors: **Paul A. Dinnage**, Stratham, NH (US); **Kevin H. Young**, Newmarket, NH (US)

(73) Assignee: **Munters Corporation**, Amesbury, MA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **10/971,087**

(22) Filed: **Oct. 25, 2004**

(65) **Prior Publication Data**

US 2005/0050906 A1 Mar. 10, 2005

Related U.S. Application Data

(63) Continuation of application No. 10/670,309, filed on Sep. 26, 2003, now abandoned, which is a continuation of application No. 10/316,952, filed on Dec. 12, 2002, now Pat. No. 6,711,907, which is a continuation-in-part of application No. 09/795,818, filed on Feb. 28, 2001, now Pat. No. 6,557,365.

(51) **Int. Cl.**
F25D 17/06 (2006.01)
F23D 23/00 (2006.01)

(52) **U.S. Cl.** **62/94**; 62/271

(58) **Field of Classification Search** 62/93, 62/94, 271

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,968,165	A *	1/1961	Gunnar	62/94
4,474,021	A *	10/1984	Harband	62/94
4,887,438	A *	12/1989	Meckler	62/271
4,936,107	A *	6/1990	Kitagaki et al.	62/184
5,649,428	A *	7/1997	Calton et al.	62/94
5,816,065	A *	10/1998	Maeda	62/271
5,931,016	A *	8/1999	Yoho, Sr.	62/271
6,269,650	B1 *	8/2001	Shaw	62/176.6
6,311,511	B1 *	11/2001	Maeda	62/271
RE37,464	E *	12/2001	Meckler	62/93
6,557,365	B1 *	5/2003	Dinnage et al.	62/271

* cited by examiner

Primary Examiner—William C. Doerrler
(74) *Attorney, Agent, or Firm*—Fitzpatrick, Cella, Harper & Scinto

(57) **ABSTRACT**

A method for conditioning air for an enclosure in which a supply air stream is cooled with a refrigerant system containing a variable compressor by passing the air over a cooling coil to reduce the temperature thereof; the thus cooled supply air stream is then passed through a segment of a rotating desiccant wheel under conditions which increase its temperature and reduce its moisture content, and then delivered to the enclosure. The desiccant wheel is regenerated by heating a regeneration air stream with the condensing coil of the refrigerant system, and then passing the heated regeneration air stream through another segment of the rotating desiccant wheel. At least one condition of the supply air stream, the regeneration air stream, and/or the refrigerant system is sensed or monitored and the output of the compressor is controlled in response to the sensed condition.

6 Claims, 14 Drawing Sheets